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EXAMINER

OH, ANDREW CHUNG SUK

ART UNIT	PAPER NUMBER
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2466

NOTIFICATION DATE	DELIVERY MODE
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ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

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Office Action Summary	Application No. 10/588,537	Applicant(s) HIGASHIDA ET AL.	
	Examiner ANDREW OH	Art Unit 2466	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 November 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-27 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 November 2009 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

1. DETAILED ACTION

2. *Information Disclosure Statement*

3. As required by **M.P.E.P. 609(C)**, the applicant's submissions of the Information Disclosure Statements dated 2009/09/22 are acknowledged by the examiner and the cited references have been considered in the examination of the claims now pending. As required by **M.P.E.P. 609 C(2)**, a copy of the PTOL-1449 initialed and dated by the examiner is attached to the instant office action.

4. *Response to Arguments*

5. Specification

6. Applicant's arguments, see p15, filed 2009/11/30, with respect to the abstract and title have been fully considered and are persuasive. The objection of the abstract and title has been withdrawn.

7. Applicant's arguments, see p15, filed 2009/11/30, with respect to the specification and antecedent basis issues with regards to claim 3, 5, 6, 10 have been fully considered and are persuasive. The objection of the specification has been withdrawn.

8. Claim Objections

9. Applicant's arguments, see p15, filed 2009/11/30, with respect to claim 16 have been fully considered and are persuasive. The objection of claim 16 has been withdrawn.

10. Drawings

11. Applicant's arguments, see p15, filed 2009/11/30, with respect to figure 1 have been fully considered and are persuasive. The objection of figure 1 has been withdrawn.

12. Tomohiko

13. Applicant's arguments filed 2009/11/30 have been fully considered but they are not persuasive. On p18, the applicant argues that Tomohiko discloses a unicast retransmission using TCP where TCP is a higher layer protocol that performs retransmission.

14. The examiner disagrees. Tomohiko makes no mention of TCP in the specification or the drawings. The only protocols mentioned are UDP, which has no retransmission capability, and IP. There is nothing to suggest preclusion of any lower-layer protocol providing retransmission capabilities for both the unicast and the multicast segments of the network. The claims remain unpatentable.

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15. Sharony

16. Applicant's arguments filed 2009/11/30 have been fully considered but they are not persuasive. On p18-19, the applicant argues that Sharony's disclosure is related to a single wireless network and would not be reasonable to combine the dual multicast / unicast network of Tomohiko.

17. The examiner disagrees. It is not necessary that Sharony disclose a network or invention that is exactly analogous to that of Tomohiko. Tomohiko discloses a unicast network and it is known in the prior art for unicast networks having retransmission schemes in the MAC layer as disclosed by Sharony. The claims remain unpatentable.

18. Wakai

19. Applicant's arguments filed 2009/11/30 have been fully considered but they are not persuasive. On p19, the applicant argues that Wakai does not mention Unicast retransmission processing of a layer lower than a layer of a communication protocol defining Multicast.

20. The examiner disagrees. It is not necessary that Wakai disclose a network or invention that is exactly analogous to that of Tomohiko or Sharony. Tomohiko discloses a unicast network and it is known in the prior art for unicast networks having retransmission schemes in the MAC layer as disclosed by Sharony. Wakai makes it obvious to one of ordinary skill the efficacy of implementing such distribution systems in an airplane. The claims remain unpatentable.

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21. Claim 2-7, 10-12, 14

22. Applicant's arguments filed 2009/11/30 have been fully considered but they are not persuasive. These dependent claims remain unpatentable because the independent claims remain unpatentable.

23. Claim 3

24. Applicant's arguments filed 2009/11/30 have been fully considered but they are not persuasive. On p20, the applicant argues that Tomohiko only teaches that an IP address of the Multicast frame is not maintained in a Unicast frame as data.

25. The examiner disagrees. The claim states that the IP Multicast frame is set as an address at a network layer which all takes place within the same frame. All the fields within the frame, including the header, qualify as "data." This "data" is maintained within the Unicast frame. The IP Multicast address is clearly set at the network layer and is later used when the Unicast frame is converted into another Multicast frame (US-2001/0018714: fig.4, fig.5, G1).

26. Claim Rejections - 35 USC § 103

27. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

28. A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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29. Claim 1, 8, 9, 13, 15, 16, 17, 19, 20, 21, 22, 23, 24, 26, 27 rejected under 35 U.S.C. 103(a) as being unpatentable over Tomohiko (EP-1134933), and further in view of Sharony (US-20040057459).

30. As to claim 1, 15, 17, 19: Tomohiko teaches a communication system comprising: a first communication device; and a second communication device, wherein said first communication device includes: a first content receiving unit operable to receive, via a first communication path, a Multicast frame which stores a content **([0042-0043]: sender transmits multicast packet with data payload to first transfer apparatus)**; a conversion unit operable to convert the received Multicast frame into a Unicast **([0045-0049]: first transfer apparatus rewrites header of multicast packet to produce unicast packet)** frame addressed to said second communication device **([0036], [0048]: unicast packet addressed to second transfer apparatus)**; and a first content transmission unit operable to transmit the converted Unicast frame to said second communication device via a second communication path **([0048-0049]: unicast packet to second transfer apparatus)**, based on a protocol having a ... processing, and said second communication device includes: a second content receiving unit operable to receive the Unicast frame transmitted via said second communication path from said first communication device based on the protocol having the ... processing **(fig.2; [0048-0050]: second transfer apparatus receives unicast packet and converts it into a multicast packet for the receivers).**

31. Tomohiko may not explicitly teach wherein the re-transmission processing is performed at a layer lower than a layer of a communication protocol defining the

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Multicast frame. However, Sharony teaches wherein the re-transmission processing is performed at a layer lower than a layer of a communication protocol defining the Multicast frame **([0053-0057]: MAC layer retransmission for 802.11 unicast by access point; wherein Tomohiko teaches the unicast portion having IP / UDP headers in addition to the data link header in fig.5, [0048])**.

32. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the teachings of Sharony into Tomohiko since Tomohiko suggests an IP / UDP unicast transmission between two packet transfer apparatuses **([0012], [0049])** in general and Tomohiko suggests a wireless unicast transmission between two wireless devices where the wireless protocol supports retransmission **([0053-0057])**, the motivation being to derive benefits such as a smaller footprint and simplification, and reduced cost from not using expensive wiring; with regards to wireless retransmission, allow the system to recover data in the event that a message fails to reach its destination.

33. As to claim 8: Tomohiko teaches the communication system according to Claim 1 further comprising a third communication device which is connected to said second communication device **(fig.2, 201, 211, 212: receivers connected to second packet transfer apparatus)**, wherein said second communication device further includes a second content transmission unit operable to transmit a content included in the Unicast frame received by said second content receiving unit to said third communication device **([0049-0050]: second packet transfer apparatus transmits packets to receivers)**,

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and said third communication device is operable to receive the content transmitted from said second communication device **([0049-0050]: receivers receive multicast packets).**

34. Tomohiko may not explicitly teach and to provide the received content to a user.

35. However, it is well known in the art that users request and receive streaming multicast content and media through receivers such as personal computers, cell phones, and other devices. It would have been obvious to one of ordinary skill at the time of the invention to have a user operate a receiver and obtain streaming content in order to provide services such as streaming music, video, VOIP, and other types of services to customers.

36. As to claim 9: Tomohiko teaches the communication system according to Claim 8, wherein said second content transmission unit is operable to convert the Unicast frame received by said second content receiving unit into a Multicast frame and to transmit the converted Multicast frame to said third communication device **([0049-0050]: second packet transfer apparatus reproduces original multicast packet from received unicast packet).**

37. As to claim 13: Tomohiko teaches the communication system according to Claim 1, wherein said first content receiving unit is operable to receive a Multicast frame which stores a plurality of the contents **([0042-0043]: sender transmits multicast packet with data payload to first transfer apparatus),** and wherein said conversion unit is

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operable to convert the Multicast frame corresponding to the plurality of the contents received by said first content receiving unit into a Unicast frame, in order to store the plurality of the contents into the single Unicast frame **([0045-0049]: first transfer apparatus rewrites header of multicast packet to produce unicast packet)**.

38. As claim 16, 20: Tomohiko teaches a receiving device which receives a content transmitted from a transmitting device, wherein the transmitting device includes: a first content receiving unit operable to receive, via a first communication path, a Multicast frame which stores the content **([0042-0043]: sender transmits multicast packet with data payload to first transfer apparatus)**; a conversion unit operable to convert the received Multicast frame into a Unicast frame **([0045-0049]: first transfer apparatus rewrites header of multicast packet to produce unicast packet)** addressed to said receiving device **([0036], [0048]: unicast packet addressed to second transfer apparatus)**; and a first content transmission unit operable to transmit the converted Unicast frame to said receiving device via a second communication path **([0048-0049]: unicast packet to second transfer apparatus)**, ..., and said receiving device comprising: a second content receiving unit operable to receive the Unicast frame transmitted from the transmitting device **([0048-0050]: second transfer apparatus receives unicast packet)** ...; and a conversion unit operable to convert the Unicast frame received by said second content receiving unit to a Multicast frame **(fig.2, 201; [0048-0050]: transfer apparatus converts uni-cast transfer to multicast)**.

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39. Tomohiko may not explicitly teach wherein the re-transmission processing is performed at a layer lower than a layer of a communication protocol defining the Multicast frame. However, Sharony teaches wherein the re-transmission processing is performed at a layer lower than a layer of a communication protocol defining the Multicast frame **([0053-0057]: MAC layer retransmission for 802.11 unicast by access point; wherein Tomohiko teaches the unicast portion having IP / UDP headers in addition to the data link header in fig.5, [0048])**.

40. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the teachings of Sharony into Tomohiko since Tomohiko suggests an IP / UDP unicast transmission between two packet transfer apparatuses **([0012], [0049])** in general and Tomohiko suggests a wireless unicast transmission between two wireless devices where the wireless protocol supports retransmission **([0053-0057])**, the motivation being to derive benefits such as a smaller footprint and simplification, and reduced cost from not using expensive wiring; with regards to wireless retransmission, allow the system to recover data in the event that a message fails to reach its destination.

41. As to claim 21, 22, 23, 24, 26, 27: Tomohiko teaches the communication system according to claim 1, 15, 16, 17, 19, 20 wherein the communication protocol defining the Multicast frame is Internet Protocol (IP) **(fig.4, 30; [0042]: multicast packet comprising IP header)**.

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42. Tomohiko may not explicitly teach and the protocol having the re-transmission processing is a protocol of a Media Access Control (MAC) layer. Sharony teaches and the protocol having the re-transmission processing is a protocol of a Media Access Control (MAC) layer **([0053-0057]: MAC layer retransmission for 802.11 unicast by access point; wherein Tomohiko teaches the unicast portion having IP / UDP headers in addition to the data link header in fig.5, [0048])**.

43. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the teachings of Sharony into Tomohiko since Tomohiko suggests an IP / UDP unicast transmission between two packet transfer apparatuses **([0012], [0049])** in general and Tomohiko suggests a wireless unicast transmission between two wireless devices where the wireless protocol supports retransmission **([0053-0057])**, the motivation being to derive benefits such as a smaller footprint and simplification, and reduced cost from not using expensive wiring; with regards to wireless retransmission, allow the system to recover data in the event that a message fails to reach its destination.

44. Claim 2, 4 rejected under 35 U.S.C. 103(a) as being unpatentable over Tomohiko (EP-1134933), Sharony (US-20040057459) as applied to claim 1 above, and further in view of Rune (US-20060062187).

45. As to claim 2: Tomohiko teaches the communication system according to Claim 1, wherein the Multicast frame is an IP Multicast frame, and said conversion unit is operable to convert the IP Multicast frame into the Unicast frame **([0045-0049]: first**

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transfer apparatus rewrites header of multicast packet to produce unicast packet).

46. Tomohiko may not explicitly teach in which a Media Access Control (MAC) address of said second communication device is set as an address at a data link layer.

47. Rune teaches in which a Media Access Control (MAC) address of said second communication device is set as an address at a data link layer **([0081]: sender encapsulates IP packet within 802.11 frame with MAC address set to the destination access router).**

48. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the teachings of Rune into Tomohiko since Tomohiko suggests an IP packet encapsulated with a data link layer header that is transmitted to a packet transfer apparatus where the destinations IP address is set as the network address **(fig.5)** in general and Rune suggests an IP packet encapsulated with an 802.11 layer-2 header with the destinations MAC address set as the layer-2 destination field, the motivation being to ensure that a frame is received by only the access router which is targeted **([0081]).**

49. As to claim 4: Tomohiko teaches the communication system according to Claim 2, wherein said conversion unit is operable to convert the IP Multicast frame to the Unicast frame **([0045-0049]: first transfer apparatus rewrites header of multicast packet to produce unicast packet)** in which an IP address of said second

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communication device is set as an address at a network layer (**[0036], [0048]: unicast packet addressed to second transfer apparatus**)

50. Tomohiko may not explicitly teach and the MAC address of said second communication device is set to as the address at the data link layer.

51. Rune teaches and the MAC address of said second communication device is set to as the address at the data link layer (**[0081]: sender encapsulates IP packet within 802.11 frame with MAC address set to the destination access router**).

52. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the teachings of Rune into Tomohiko since Tomohiko suggests an IP packet encapsulated with a data link layer header that is transmitted to a packet transfer apparatus where the destination IP address is set as the network address (**fig.5**) in general and Rune suggests an IP packet encapsulated with an 802.11 layer-2 header with the destinations MAC address set as the layer-2 destination field, the motivation being to ensure that a frame is received by only the access router which is targeted (**[0081]**).

53. Claim 3 rejected under 35 U.S.C. 103(a) as being unpatentable over Tomohiko (EP-1134933), Sharony (US-20040057459), Rune (US-20060062187) as applied to claim 2 above, and further in view of Tomohiko-US (US-20010018714).

54. As to claim 3: Tomohiko teaches the communication system according to Claim 2, wherein said conversion unit is operable to convert the IP Multicast frame to the

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Unicast frame **([0045-0049]: first transfer apparatus rewrites header of multicast packet to produce unicast packet).**

55. Tomohiko may not explicitly teach in which an IP address included in the IP Multicast frame is set as an address at a network layer.

56. Tomohiko-US teaches in which an IP address included in the IP Multicast frame is set as an address at a network layer **(fig.3, fig.4 ;[0059-0061]: G1 and S1 are maintained in the unicast and multicast packet).**

57. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the teachings of Tomohiko-US into Tomohiko since Tomohiko suggests a communication system of converting a multicast packet into a unicast packet **([0045-0049])** in general and Tomohiko-US suggests a communication system of converting a multicast packet into a unicast packet where an IP address included in the IP multicast frame is set as the address at a network layer, the motivation being to restore the multicast packet and transmit the packet to the correct destination **([0064]).**

58. Tomohiko may not explicitly teach and the MAC address of said second communication device is set to as the address at the data link layer.

59. Rune teaches and the MAC address of said second communication device is set to as the address at the data link layer **([0081]: sender encapsulates IP packet within 802.11 frame with MAC address set to the destination access router).**

60. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the teachings of Rune into Tomohiko since Tomohiko

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suggests an IP packet encapsulated with a data link layer header that is transmitted to a packet transfer apparatus where the destinations IP address is set as the network address **(fig.5)** in general and Rune suggests an IP packet encapsulated with an 802.11 layer-2 header with the destinations MAC address set as the layer-2 destination field, the motivation being to ensure that a frame is received by only the access router which is targeted **([0081])**.

61. Claim 5, 10 rejected under 35 U.S.C. 103(a) as being unpatentable over Tomohiko (EP-1134933), Sharony (US-20040057459) as applied to claim 1 above, and further in view of Zisapel (US-20030195984).

62. As to claim 5: Tomohiko teaches the communication system according to Claim 1.

63. Tomohiko may not explicitly teach wherein said second communication device further includes a second content request unit operable to request said first communication device to distribute the content, and said first communication device further includes a first content request receiving unit operable to receive the content request from said second communication device.

64. Zisapel teaches wherein said second communication device further includes a second content request unit operable to request said first communication device to distribute the content **(fig.3f, 135, 145; [0136-0137]: content router forwards requests issued by client to server via router)**, and said first communication device further includes a first content request receiving unit operable to receive the content

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request from said second communication device (**fig.3f, 135, 145; [0136-0137]: content router forwards requests issued by client to server via router**).

65. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the teachings of Zisapel into Tomohiko since Tomohiko suggests a first and a second packet transfer device relaying media to client devices from a source device (**[0045-0050]**) in general and Zisapel suggests a first and a second packet transfer device relaying client requests to a server (**[0136-0137]**), the motivation being to provide the content and services on-demand that are desired by the client and to enable load balancing (**[0022]**).

66. Tomohiko may not explicitly teach and wherein said first content receiving unit is operable to extract from the Multicast frames transmitted via said first communication path a Multicast frame ... and operable to receive the extracted Multicast frame.

67. Since the specification does not explicitly mention this particular limitation, the examiner interprets this limitation as a single multicast frame being taken out of a stream of a plurality of multicast frames. Tomohiko may not explicitly teach a first packet transfer apparatus receiving a plurality of multicast packets although Tomohiko teaches a data unit receiving and distributing multiple data packets (**[0006]**). It is common knowledge in the art to stream multiple packets in a multicast stream, especially with regards to audio, video, and other media content. It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate a first packet transfer apparatus of Tomohiko (**fig.2, 101**) as receiving a plurality of multicast packets, the motivation being to support robust audio and video streaming at high

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quality, also, a single multicast packet would be unlikely to contain enough data to service a sustained exchange.

68. As to claim 10: Tomohiko teaches the communication system according to Claim 8.

69. Tomohiko may not explicitly teach wherein said second communication device further includes: a second content request receiving unit operable to receive the content request from said third communication device; a second content request unit operable to request said first communication device to distribute a content corresponding to the content request received by said second content request receiving unit, and said first communication device further includes a first content request receiving unit operable to receive the content request from said second communication device.

70. Zisapel teaches wherein said second communication device further includes: a second content request receiving unit operable to receive the content request from said third communication device **(fig.3f, 135, 145; [0136-0137]: content router forwards requests issued by client to server via router)**; a second content request unit operable to request said first communication device to distribute a content corresponding to the content request received by said second content request receiving unit **(fig.3f, 135, 145; [0136-0137]: content router forwards requests issued by client to server via router)**, and said first communication device further includes a first content request receiving unit operable to receive the content request from said second

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communication device (**fig.3f, 135, 145; [0136-0137]: content router forwards requests issued by client to server via router**).

71. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the teachings of Zisapel into Tomohiko since Tomohiko suggests a first and a second packet transfer device relaying media to client devices from a source device (**[0045-0050]**) in general and Zisapel suggests a first and a second packet transfer device relaying client requests to a server (**[0136-0137]**), the motivation being to provide the content and services on-demand that are desired by the client and to enable load balancing (**[0022]**).

72. Tomohiko may not explicitly teach and wherein said first content receiving unit is operable to extract from the Multicast frames which have been transmitted via said first communication path a Multicast frame which stores the content corresponding to the content request received by said first content request receiving unit, and operable to receive the extracted Multicast frame.

73. Since the specification does not explicitly mention this particular limitation, the examiner interprets this limitation as a single multicast being taken out of a stream of a plurality of multicast frames. Tomohiko may not explicitly teach a first packet transfer apparatus receiving a plurality of multicast packets although Tomohiko teaches a data unit receiving and distributing multiple data packets (**[0006]**). It is common knowledge in the art to stream multiple packets in a multicast stream, especially with regards to audio, video, and other media content. It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate a first packet transfer apparatus

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of Tomohiko (**fig.2, 101**) as receiving a plurality of multicast packets, the motivation being to support robust audio and video streaming at high quality, also, a single multicast packet would be unlikely to contain enough data to service a sustained exchange.

74. Claim 6 rejected under 35 U.S.C. 103(a) as being unpatentable over Tomohiko (EP-1134933), Sharony (US-20040057459), Zisapel (US-20030195984) as applied to claim 5 above, and further in view of Alexander (US-7411901).

75. As to claim 6: Tomohiko teaches the communication system according to Claim 5 ... said conversion unit is operable to convert the ... of the Multicast frames which have been received by said first content receiving unit and are corresponding to the ... of the contents into Unicast frames ... which have been converted by said conversion unit to the ... of said second communication devices **([0045-0049]: first transfer apparatus rewrites header of multicast packet to produce unicast packet).**

76. Tomohiko may not explicitly teach said first content receiving unit is operable to extract from the Multicast frames which are transmitted via said first communication path Multicast frames corresponding to a plurality of contents corresponding to the plurality of the content requests received by said first content request receiving unit, and operable to receive the extracted Multicast frames.

77. Since the specification does not explicitly mention this particular limitation, the examiner interprets this limitation as a single multicast being taken out of a stream of a plurality of multicast frames. Tomohiko may not explicitly teach a first packet transfer

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apparatus receiving a plurality of multicast packets although Tomohiko teaches a data unit receiving and distributing multiple data packets **([0006])**. It is common knowledge in the art to stream multiple packets in a multicast stream, especially with regards to audio, video, and other media content. It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate a first packet transfer apparatus of Tomohiko **(fig.2, 101)** as receiving a plurality of multicast packets, the motivation being to support robust audio and video streaming at high quality, also, a single multicast packet would be unlikely to contain enough data to service a sustained exchange.

78. Tomohiko may not explicitly teach further comprising a plurality of said second communication devices, wherein said first content request receiving unit is operable to receive the content requests from the plurality of said second communication devices, ... which are addressed to the plurality of said second communication devices which have requested the contents, and said first content transmission unit is operable to transmit the Unicast frames.

79. Alexander teaches further comprising a plurality of said second communication devices **(col.4, ln.45-65: plurality of devices receiving unicast packets transmitted from a single packet transfer device)**, wherein said first content request receiving unit is operable to receive the content requests from the plurality of said second communication devices **(col.4, ln.45-65: multiple unicast streams transmitted at request of receiving device)** ... which are addressed to the plurality of said second communication devices which have requested the contents **(col.4, ln.45-65: multiple**

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unicast streams transmitted at request of receiving device), and said first content transmission unit is operable to transmit the Unicast frames (col.4, ln.45-65: plurality of devices receiving unicast packets transmitted from a single packet transfer device).

80. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the teachings of Alexander into Tomohiko since Tomohiko suggests transmitting unicast streams ([0045-0049]) in general and Alexander suggests transmitting multiple unicast streams to requesting nodes, the motivation being to provide a fast, efficient highly scalable, low cost method of disseminating streaming media in a one-to-many environment (col.4, ln.45-65).

81. **Claim 7 rejected under 35 U.S.C. 103(a) as being unpatentable over Tomohiko (EP-1134933), Sharony (US-20040057459), Zisapel (US-20030195984), Alexander (US-7411901) as applied to claim 6 above, and further in view of Lipp (US-6751219).**

82. As to claim 7: Tomohiko teaches the communication system according to Claim 6.

83. Tomohiko may not explicitly teach wherein said first communication device further includes a first content duplication unit operable to duplicate a content requested by the plurality of said second communication devices among a plurality of contents included in the Multicast frames received by said first content receiving unit, and wherein said conversion unit is operable to convert the Multicast frames corresponding

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to a plurality of the identical contents which have been duplicated by said first content duplication unit into Unicast frames which are addressed to the plurality of said second communication devices which have requested the content, and said first content transmission unit is operable to transmit the Unicast frames which have been converted by said conversion unit to the plurality of said second communication devices which have requested the content.

84. Lipp teaches wherein said first communication device further includes a first content duplication unit operable to duplicate a content requested by the plurality of said second communication devices among a plurality of contents included in the Multicast frames received by said first content receiving unit (**abstract; fig.8; col.4, ln.3-12, 39-45, col.9, ln.36—col.10, ln.64: multicast packet is replicated into several unicast packets**), and wherein said conversion unit is operable to convert the Multicast frames corresponding to a plurality of the identical contents which have been duplicated by said first content duplication unit into Unicast frames which are addressed to the plurality of said second communication devices which have requested the content (**abstract; fig.8; col.4, ln.3-12, 39-45, col.9, ln.36—col.10, ln.64: multicast packet is replicated into several unicast packets; destination field stores different destination addresses**), and said first content transmission unit is operable to transmit the Unicast frames which have been converted by said conversion unit to the plurality of said second communication devices which have ... the content (**abstract; fig.8; col.4, ln.3-12, 39-45, col.9, ln.36—col.10, ln.64: multicast packet is replicated into several unicast packets; destination field stores a plurality of destination addresses**).

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85. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the teachings of Lipp into Tomohiko since Tomohiko suggests converting multicast packets into unicast packets ([0045-0049]) in general and Lipp suggests duplicating multicast packets into unicast packets, the motivation being to reduce congestion and latency (col.3, ln.37-49).

86. Claim 11, 12 rejected under 35 U.S.C. 103(a) as being unpatentable over Tomohiko (EP-1134933), Sharony (US-20040057459), Zisapel (US-20030195984) as applied to claim 10 above, and further in view of Lipp (US-6751219), Alexander (US-7411901).

87. As to claim 11: Tomohiko teaches the communication system according to Claim 10 further comprising a plurality of said third communication devices (fig.2, 211, 212).

88. Tomohiko may not explicitly teach wherein said second communication device further includes a second content duplication unit operable to duplicate the content requested by the plurality of said third communication devices among a plurality of contents included in the Multicast frames received by said second content receiving unit, and said second content transmission unit operable to transmit a plurality of identical contents which have been duplicated by said second duplication unit to the plurality of said third communication devices which have requested the contents.

89. Lipp teaches wherein said second communication device further includes a second content duplication unit operable to duplicate the content ... by the plurality of said third communication devices among a plurality of contents included in the Multicast

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frames received by said second content receiving unit **(abstract; fig.8; col.4, ln.3-12, 39-45, col.9, ln.36—col.10, ln.64: multicast packet is replicated into several unicast packets)**, and said second content transmission unit operable to transmit a plurality of identical contents which have been duplicated by said second duplication unit to the plurality of said third communication devices which have ... the contents **(abstract; fig.8; col.4, ln.3-12, 39-45, col.9, ln.36—col.10, ln.64: multicast packet is replicated into several unicast packets; destination field stores a plurality of destination addresses)**.

90. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the teachings of Lipp into Tomohiko since Tomohiko suggests converting multicast packets into unicast packets **([0045-0049])** in general and Lipp suggests duplicating multicast packets into unicast packets, the motivation being to reduce congestion and latency **(col.3, ln.37-49)**.

91. Tomohiko, Lipp may not explicitly teach requests from plurality of third communications devices.

92. Alexander teaches requests from third communications devices **(col.4, ln.45-65: plurality of devices receiving unicast packets transmitted from a single packet transfer device at request of receiving device)**.

93. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the teachings of Alexander into Tomohiko since Tomohiko suggests transmitting unicast streams **([0045-0049])** in general and Alexander suggests transmitting multiple unicast streams to requesting nodes, the

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motivation being to provide a fast, efficient highly scalable, low cost method of disseminating streaming media in a one-to-many environment (**col.4, ln.45-65**).

94. As to claim 12: Tomohiko teaches the communication system according to Claim 10 further comprising a plurality of said third communication devices (**fig.2, 211, 212**).

95. Tomohiko may not explicitly teach wherein said second content request unit is operable to request said first communication device to distribute the content.

96. Zisapel teaches wherein said second content request unit is operable to request said first communication device to distribute the content (**fig.3f, 135, 145; [0136-0137]: content router forwards requests issued by client to server via router**).

97. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the teachings of Zisapel into Tomohiko since Tomohiko suggests a first and a second packet transfer device relaying media to client devices from a source device (**[0045-0050]**) in general and Zisapel suggests a first and a second packet transfer device relaying client requests to a server (**[0136-0137]**), the motivation being to provide the content and services on-demand that are desired by the client and to enable load balancing (**[0022]**).

98. Tomohiko may not explicitly teach after receiving all content requests from the plurality of said third communication devices.

99. Alexander teaches after receiving all content requests from the plurality of said third communication devices (**col.4, ln.45-65: plurality of devices receiving unicast**

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packets transmitted from a single packet transfer device at request of receiving device).

100. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the teachings of Alexander into Tomohiko since Tomohiko suggests transmitting unicast streams **([0045-0049])** in general and Alexander suggests transmitting multiple unicast streams to requesting nodes, the motivation being to provide a fast, efficient highly scalable, low cost method of disseminating streaming media in a one-to-many environment **(col.4, ln.45-65).**

101. Tomohiko may not explicitly teach in a case where the contents requested by the plurality of said third communication devices are identical.

102. Lipp teaches in a case where the contents requested by the plurality of said third communication devices are identical **(col.2, ln.7-27: payload that is duplicated is identical for each packet).**

103. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the teachings of Lipp into Tomohiko since Tomohiko suggests converting multicast packets into unicast packets **([0045-0049])** in general and Lipp suggests duplicating multicast packets into unicast packets, the motivation being to reduce congestion and latency **(col.3, ln.37-49).**

104. Claim 14 rejected under 35 U.S.C. 103(a) as being unpatentable over Tomohiko (EP-1134933), Sharony (US-20040057459) as applied to claim 1 above, and further in view of Wesley (US-6076114).

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105. As to claim 14: Tomohiko teaches the communication system according to Claim 1 ... and said first content receiving unit is operable to receive, via said first communication path, the Multicast frame which stores the content **([0042-0043])**,

106. Tomohiko may not explicitly teach wherein said first communication path is a wire ... based on the protocol having the re-transmission processing.

107. Wesley teaches wherein said first communication path is a wire **(col.7, ln.48-67: wired network)** ... based on the protocol having the re-transmission processing **(col.7, ln.48-67: UDP resending and retransmission)**.

108. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the teachings of Wesley into Tomohiko since Tomohiko suggests IP and UDP protocol **([0042])** in general and Wesley suggests UDP and IP over wired networks and UDP having retransmission capabilities, the motivation being to overcome problems of latency and data loss in unstable communications environments **(col.7, ln.48-67)**.

109. Claim 18, 25 rejected under 35 U.S.C. 103(a) as being unpatentable over Tomohiko (EP-1134933), and further in view of Sharony (US-20040057459), Wakai (US-5973722).

110. As to claim 18: Tomohiko teaches a content distribution system for distributing a content ... said system comprising a first communication device and a second communication device, wherein said first communication device includes: a first content receiving unit operable to receive, via a first communication path, a Multicast frame

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which stores a content **([0042-0043]: sender transmits multicast packet with data payload to first transfer apparatus)**; a conversion unit operable to convert the received Multicast frame into a Unicast frame **([0045-0049]: first transfer apparatus rewrites header of multicast packet to produce unicast packet)** addressed to said second communication device **([0036], [0048]: unicast packet addressed to second transfer apparatus)**; and a first content transmission unit operable to transmit the converted Unicast frame to said second communication device via a ... second communication path **([0048-0049]: unicast packet to second transfer apparatus)** ... and said second communication device includes: a second content receiving unit operable to receive the Unicast frame transmitted from said first communication device via said second communication path **([0048-0050]: second transfer apparatus receives unicast packet)** ... and a second content transmission unit operable to transmit the content included in the Unicast frame received by said second content receiving unit **([0048-0050]: restore multicast packet and send contents from second transfer apparatus to receivers).**

111. Tomohiko may not explicitly teach a second communication path, based on a protocol having a retransmission processing ... wherein the re-transmission processing is performed at a layer lower than a layer of a communication protocol defining the Multicast frame.

112. Sharony teaches a second communication path, based on a protocol having a retransmission processing ... wherein the re-transmission processing is performed at a layer lower than a layer of a communication protocol defining the Multicast frame

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([0053-0057]: MAC layer retransmission for 802.11 unicast by access point; wherein Tomohiko teaches the unicast portion having IP / UDP headers in addition to the data link header in fig.5, [0048]).

113. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the teachings of Sharony into Tomohiko since Tomohiko suggests an IP / UDP unicast transmission between two packet transfer apparatuses **([0012], [0049])** in general and Tomohiko suggests a wireless unicast transmission between two wireless devices where the wireless protocol supports retransmission **([0053-0057])**, the motivation being to derive benefits such as a smaller footprint and simplification, and reduced cost from not using expensive wiring; with regards to wireless retransmission, allow the system to recover data in the event that a message fails to reach its destination.

114. Tomohiko may not explicitly teach to the seat in the content distribution system.

115. Wakai teaches to the seat in the content distribution system **(col.17, ln.41-60, col.18, ln.42-54: multicast media to passengers)**.

116. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the teachings of Wakai into Tomohiko since Tomohiko suggests media distribution to receivers **([0049-0050])** in general and Wakai suggests media distribution in an airplane to passengers, the motivation being to allow passengers the choice of receiving or not receiving a media stream **(col.17, ln.41-60, col.18, ln.42-54)**.

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117. As to claims 25: Tomhiko teaches the content distribution system according to claim 18, wherein the communication protocol defining the Multicast flame is Internet Protocol (IP) (**fig.4, 30; [0042]: multicast packet comprising IP header**).

118. Tomohiko may not explicitly teach and the protocol having the re-transmission processing is a protocol of a Media Access Control (MAC) layer. Sharony teaches and the protocol having the re-transmission processing is a protocol of a Media Access Control (MAC) layer (**[0053-0057]: MAC layer retransmission for 802.11 unicast by access point; wherein Tomohiko teaches the unicast portion having IP / UDP headers in addition to the data link header in fig.5, [0048]**).

119. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the teachings of Sharony into Tomohiko since Tomohiko suggests an IP / UDP unicast transmission between two packet transfer apparatuses (**[0012], [0049]**) in general and Tomohiko suggests a wireless unicast transmission between two wireless devices where the wireless protocol supports retransmission (**[0053-0057]**), the motivation being to derive benefits such as a smaller footprint and simplification, and reduced cost from not using expensive wiring; with regards to wireless retransmission, allow the system to recover data in the event that a message fails to reach its destination.

120. Conclusion

121. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

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§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

122. A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

123. Any inquiry concerning this communication or earlier communications from the examiner should be directed to ANDREW OH whose telephone number is (571)270-5273. The examiner can normally be reached on M-F 8:30AM - 5AM EST.

124. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Daniel J. Ryman can be reached on (571)272-3152. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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125. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

126.

127.

128. /A. O./

129. Examiner, Art Unit 2466

130. /Daniel J. Ryman/

131. Supervisory Patent Examiner, Art Unit 2466